

### **REMARKS**

The Non-Final Office Action mailed August 3, 2009, has been received and reviewed. Prior to the present communication, claims 1-24 and 39-48 were pending in the subject application. All claims stand rejected. Each of claims 1-2, 5-7, 9, 12-13, 16, 19-20, and 39-41 has been amended herein. Claims 3, 4, and 8 are cancelled herein. Claim 49 has been added. Care has been exercised to introduce no new subject matter. Claims 1-2, 5-7, 9-24, and 39-49 remain pending, and are believed to be in condition for allowance. Reconsideration of the above-identified application is respectfully requested in view of the above amendments and the following remarks.

#### **Rejections based on 35 U.S.C. § 101**

Initially, Applicant notes that the scope of subject matter eligible for patent protection is defined by judicial exceptions and 35 U.S.C. § 100-101. The judicial exceptions prohibit patents on abstract ideas, laws of nature, and natural phenomena. Section 100(b) defines process to mean “process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.” Moreover, Section 101 states “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.” The Supreme Court and Federal Circuit have recognized that the scope of statutory subject matter is broad. *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09 (1980) (Congress chose the expansive language of 35 U.S.C. § 101 so as to include “anything under the sun that is made by man” as statutory subject matter.) The USPTO has adopted the Supreme Court’s interpretation and has stated that, in practice, the complete definition of the scope of 35 U.S.C. § 101 “is that any new and useful process, machine,

manufacture or composition of matter under the sun that is made by man is the proper subject matter of a patent.” MPEP 2106(IV)(A). Additionally, the Federal Circuit, in *In re Bilski*, stated that “[a] claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing...” 545 F. 3d 943, 961-62 (Fed. Cir. 2008) (“*Bilski*”).

The MPEP also states that “computer programs are often recited as part of a claim.” MPEP 2106.01(I). In considering such claims, “USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim.” *Id.*; see also *In re Beauregard*, 53 F.3d 1582 (Fed. Cir. 1995). “The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program.” MPEP 2106.01(I). Recently, in *Ex Parte Bo Li*, a decision by the Board of Patent Appeals and Interferences following *Bilski*, the Board deemed a computer implemented program to generate reports to be patent eligible subject matter. See *Ex Parte Bo Li*, Appeal 2008-1213 (BPAI 2008). As such, *Beauregard* claims remain patent-eligible.

Claim 39 stands rejected under 35 U.S.C. § 101 because the claimed invention is stated to be directed to non-statutory subject matter. See *Office Action* p. 2. More particularly, the process steps in claim 39 have been rejected for (1) not being tied to a machine, and (2) not executing a transformation. *Id.* Applicants respectfully traverse the 35 U.S.C. § 101 rejection of claim 39 as hereinafter set forth.

It is respectfully submitted that independent claim 39 is patent-eligible under § 101 as it is (1) tied to computer-storage media that (2) transforms a particular article into a different state by “utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time.” As such, the 35 U.S.C. § 101 rejection of claim 39 is believed to be overcome and therefore Applicants respectfully request withdrawal of the rejection of claim 39 under 35 U.S.C. § 101. Claim 39 is believed to be in condition for allowance and such favorable action is respectfully requested.

### **Rejections based on 35 U.S.C. § 103**

#### **A.) Applicable Authority**

Title 35 U.S.C. § 103(a) declares, a patent shall not issue when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The Supreme Court in *Graham v. John Deere* counseled that an obviousness determination is made by identifying: the scope and content of the prior art; the level of ordinary skill in the prior art; the differences between the claimed invention and prior art references; and secondary considerations. *Graham v. John Deere Co.* 383 U.S. 1 (1966).

To support a finding of obviousness, the initial burden is on the Office to apply the framework outlined in *Graham* and to provide some “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex*

*Inc.* 127 S.Ct. 1727 at 1741, 82 USPQ2d at 1396 (quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) with approval). *See also* MPEP § 2142. “[R]jections on obviousness cannot be sustained with mere conclusory statements.” *Id.* Thus, in order to establish a *prima facie* case of obviousness the Office must provide “a clear articulation of the reason(s) why the claimed invention would have been obvious” based on factual findings made while conducting the *Graham* factual inquiries. *See* MPEP § 2143. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. *Id.*

**B.) Rejection Based on Whiting-O’Keefe in View of Pollack in Further View of Andre**

Claims 1-5, 7-17, 19-24, 39 and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,061,657 to Whiting-O’Keefe (hereinafter “Whiting-O’Keefe reference”) in view of U.S. Patent No. 5,809,477 to Pollack (hereinafter “Pollack reference”), in further view of U.S. Patent No. 7,155,399 to Andre et al. (hereinafter “Andre reference”). As the asserted combination of references fails to teach or suggest all of the limitations set forth in the rejected claims, Applicants respectfully traverse the rejection, as hereinafter set forth.

Amended independent claim 1 recites a computer-implemented method for determining an amount of work provided by a health care provider for a particular patient. The method comprises: obtaining patient data for the particular patient directly from a primary clinical information system; determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population; comparing the data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each satisfied work factor with a

weighted score; calculating, with a computer processor, a work score for the particular patient using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient; and storing the particular patient's work score.

The Whiting-O'Keefe reference is cited in the outstanding office action as disclosing the following limitation: "calculating, with a computer processor, a work score for each of the one or more patients utilizing the data." *See Office Action* p. 3. It is respectfully submitted that the Whiting-O'Keefe reference does not teach or suggest "calculating, with a computer processor, a work score for the particular patient using the satisfied work factors," as recited in amended independent claim 1. To the contrary, the Whiting-O'Keefe reference discloses estimating "charges" for "episodes of care for identified primary and collateral illnesses." *See Whiting-O'Keefe reference* at Col. 7, lines 53-54.

Calculating a work score for a particular patient using satisfied work factors includes "determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; [and] assigning each satisfied work factor with a weighted score," as recited in amended independent claim 1. Work factors relate to the patient population to which the patient belongs. *See Specification* at ¶ [0049]. For example, a patient in the intensive care unit (ICU) is associated with a catalog of particular work factors related to treating ICU patients. *Id.* Patient data is compared to the work factors to assign weights to the satisfied work factors. *See Specification* at ¶¶ [0054]-[0056]. A work score is then generated for a patient based on the weights assigned to the satisfied work factors for the particular patient. *See Specification* at ¶ [0057].

Because weights are assigned to the satisfied work factors, a work score calculated for a particular patient does not correlate directly to the charges estimated in the Whiting-O'Keefe reference. Further, a triggered work factor may be adjusted based on the particular patient, taking into account the relevant work factors, and the associated characteristics of the particular patient being treated. *See Specification* at ¶ [0055]. For example, drawing blood from any type of patient may generate a charge of \$20 each time the task is ordered under the Whiting-O'Keefe reference, but in the above-identified application, a higher-weighted work score may be generated to draw blood from an infant than from an adult patient. In fact, the Whiting-O'Keefe reference teaches away from a work score calculation that uses work factors satisfied by actual patient data. The Whiting-O'Keefe charge estimates depend on a table of regression coefficients calculated from healthcare encounter records. *See Whiting-O'Keefe reference* at Col. 8, lines 1-7. Further, the Whiting-O'Keefe reference admits that its system does not consider the data of the patient in question because it evaluates the charges to treat a specific patient or group of patients "who will usually *not* be included in the population from which the encounter records are taken." *Id.* at Col. 8, lines 21-24 (emphasis added).

As acknowledged in the outstanding Office Action, the Whiting-O'Keefe reference fails to describe "obtaining data for one or more patients directly from a primary clinical information system." *See Office Action* p. 3. For this, the Pollack reference is relied on. It is respectfully submitted that the Pollack reference does not cure the deficiencies of the Whiting-O'Keefe reference, as it also does not teach or suggest "calculating, with a computer processor, a work score for the particular patient using the satisfied work factors," or "determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population; comparing the patient data for the particular

patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; [and] assigning each satisfied work factor with a weighted score,” as recited by amended independent claim 1. The Pollack reference discloses quantifying the severity of a patient’s condition through retrieval of automated patient information. *See Pollack reference* Col. 4 lines 44-46, Col. 11, Lines 29-31, Col. 17, Lines 66-67. While the Pollack reference discloses “obtaining data for one or more patients,” the reference is directed towards evaluation of patient illness as it relates to the length of patient stay and patient bed availability. *See Office Action*, p. 3; *Pollack reference* Col. 3, lines 27-46. While theses determinations are driven by “automated patient information,” the Pollack reference still does not teach or suggest the use of a “primary clinical information system” which relates to the “planning and documenting of care.” *See Specification* at ¶¶ [0006] and [0007].

It is respectfully submitted that the Andre reference does not cure the deficiencies of the Whiting-O’Keefe and Pollack references, as it also does not teach or suggest “obtaining patient data for the particular patient directly from a primary clinical information system; determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population; comparing the data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each satisfied work factor with a weighted score; and calculating, with a computer processor, a work score for the particular patient using the satisfied work factors,” as recited by amended independent claim 1. Additionally, the Andre reference fails to teach “wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient,” as recited in amended independent claim 1. Rather, the Andre reference discloses a work score generated and assigned by a schedule evaluator based on employee

schedule changes. *See Andre reference* Col. 5, Lines 35-39. The schedule generated by addition or removal of a patient depends upon the work performed by the changed employee. *See Andre reference* Col. 5, Lines 49-58. It is respectfully submitted that the amount of work performed by an employee added or removed from a schedule, as described by the Andre reference, is distinct from a work score based on the quantity of personnel hours anticipated to serve a particular patient. As previously discussed, a work score is calculated based on satisfying work factors for a particular patient. A work score, as described in the specification of the above-identified application, may be a “patient classification score, a workload score or any other value that assigns a classification value or an amount of work to the patient.” *See Specification*, ¶ [0052]

It is respectfully submitted that the Andre reference also does not teach or suggest “storing the particular patient’s work score,” as recited in amended independent claim 1. *See Office Action* p. 4. While the Andre reference discloses creating a score based on a change in employee schedules, this score does not teach or suggest “storing the work score,” as disclosed in independent claim 1. *See Andre reference* Col. 5, line 37. Thus, Applicants respectfully submit that the Whiting-O’Keefe, Pollack, and Andre references, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 1. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a). Claim 1 is believed to be in condition for allowance and such favorable action is respectfully requested.

Each of claims 2, 5-7, and 9-11 depends either directly or indirectly from independent claim 1. As such, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims as well, for at least the above-cited reasons. Each of claims 2, 5-7, and 9-11 is believed to be in condition for allowance and such favorable action is respectfully requested.



Amended independent claim 12 is directed to one or more computer-storage media having computer-executable instructions embodied thereon, that when executed by a computing system having a processor and memory, cause the computing system to perform a method. The method comprises: obtaining patient data for one or more patients in a patient population directly from a primary clinical information system; determining a type of patient population that each of the one or more patients are a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each satisfied work factor with a weighted score; and calculating, with the processor, a work score for each of the one or more patients in the patient population, wherein the work score is a value that indicates an amount of work to treat each of the one or more patients in the patient population; storing one or more work scores for the one or more patients in the patient population; and calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population.

The Whiting-O'Keefe reference is cited in the outstanding office action as disclosing "calculating, with the processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system." *See Office Action* p. 7. It is respectfully submitted that the Whiting-O'Keefe reference does not teach or suggest "obtaining patient data for one or more patients in a patient population directly from a primary clinical information system; determining a type of patient population that each of the one or more patients are a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each

satisfied work factor with a weighted score; and calculating, with the processor, a work score for each of the one or more patients in the patient population,” as recited in amended independent claim 12. To the contrary, the Whiting-O’Keefe reference discloses estimating “charges” for “episodes of care,” where the charges depend on a table of regression coefficients calculated from healthcare encounter records. *See Whiting-O’Keefe reference* at Col. 7, lines 53-54, and Col. 8, lines 1-7. As previously discussed, the Whiting-O’Keefe reference does not disclose calculating a work score based on work factors. Additionally, charge estimations in the Whiting-O’Keefe reference are not based on “obtaining patient data for one or more patients in a patient population directly from a primary clinical information system.” Instead, the Whiting-O’Keefe reference evaluates the charges to treat patients “who will usually *not* be included in the population from which the encounter records are taken.” *See Whiting-O’Keefe reference* at Col. 8, lines 21-24 (emphasis added).

As acknowledged in the outstanding Office Action, the Whiting-O’Keefe reference fails to disclose “calculating staffing needs for the population based on the work scores obtained for the patients in the patient population.” *See Office Action* pp. 7-8. For this, the Pollack reference is relied on by the Office. The Pollack reference is generally directed to retrieving automated patient information to estimate bed availability for patients awaiting admission by evaluating the severity of the illnesses of patients already in a particular population. *See Pollack reference* Col. 4, Lines 44-46, Col. 3, Lines 28-30, Col. 11, Lines 29-31, and Col. 17, Lines 66-67. Although the Pollack reference evaluates bed availability and severity of illness, it does not “calculat[e] staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population,” as recited in amended independent claim 12. It is respectfully submitted that, although allocating hospital beds based

on severity of illness may be considered a form of “work,” the work score calculation of claim 12 takes into account different factors to determine “staffing needs.” Additionally, it is respectfully submitted that the Pollack reference also does not cure the deficiencies of the Whiting-O’Keefe reference, as it also does not disclose “obtaining patient data for one or more patients in a patient population directly from a primary clinical information system; determining a type of patient population that each of the one or more patients are a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each satisfied work factor with a weighted score; and calculating, with the processor, a work score for each of the one or more patients in the patient population,” as recited in amended independent claim 12.

The Andre reference is cited in the outstanding office action as disclosing the following limitations: “wherein the work score indicates a quantity of personnel hours anticipated to serve each of the one or more patients,” and “storing the work score.” *See Office Action* p. 8. It is respectfully submitted that the Andre reference does not cure the deficiencies of the Whiting-O’Keefe or Pollack references. The Andre reference also does not teach or suggest the limitations stating: “wherein the work score is a value that indicates an amount of work to treat each of the one or more patients in the patient population,” and “storing one or more work scores for the one or more patients in the patient population,” as recited in amended independent claim 12. As previously discussed, the Andre reference discloses a work score assigned by a schedule evaluator based on employee schedule changes. *See Andre reference* Col. 5, Lines 35-39. The schedule generated by addition or removal of a patient depends upon the work performed by the changed employee. *See Andre reference* Col. 5, Lines 49-58. It is respectfully

submitted that the amount of work performed by the employee added or removed from a schedule in the Andre reference is distinct from the work score “value that indicates an amount of work to treat each of the one or more patients in the patient population,” as recited in amended independent claim 12.

Thus, Applicants respectfully submit that the Whiting-O’Keefe, Pollack, and Andre references, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 12. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 12 under 35 U.S.C. § 103(a). Claim 12 is believed to be in condition for allowance and such favorable action is respectfully requested.

Each of claims 13-24 depends either directly or indirectly from independent claim 12. As such, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of these claims as well, for at least the above-cited reasons. Each of claims 13-24 is believed to be in condition for allowance and such favorable action is respectfully requested.

Independent claim 39 recites one or more computer-storage media having computer-executable instructions embodied thereon that when executed by a computing system having a processor and memory, cause the computing system to perform a method. The method comprises: obtaining patient data for a particular patient at a first point in time directly from a primary clinical information system; determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to work factors to determine which work factors are satisfied; accessing weighted values for each satisfied work factor; assigning each satisfied work factor with a weighted score; utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of a

work score includes a measure of personnel hours anticipated for the particular patient at a first point in time; storing the first instance of a work score; obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system; determining a type of patient population that the patient is a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to work factors to determine which work factors are satisfied; accessing weighted values for each satisfied work factor; assigning each satisfied work factor with a weighted score; utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time; storing the second instance of a work score; and trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system. Support for the amendments to claim 39 can at least be found in paragraphs [0053]-[0057 and [0064] of the previously presented specification.

The Whiting-O'Keefe reference is cited in the outstanding Office Action as disclosing "utilizing the data to calculate work for the one or more patients," *See Office Action* p. 13. As previously discussed, the Whiting-O'Keefe reference discloses estimating "charges" for "episodes of care for identified primary and collateral illnesses" that depend on a table of regression coefficients calculated from healthcare encounter records. *See Whiting-O'Keefe reference* at Col. 7, lines 53-54, Col. 8, lines 1-7. It is respectfully submitted that the Whiting-O'Keefe reference not teach or suggest "determining a type of patient population that the particular patient is a member of; accessing work factors for the type of patient population;

comparing the patient data for the particular patient to work factors to determine which work factors are satisfied; accessing weighted values for each satisfied work factor; assigning each satisfied work factor with a weighted score; utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors,” as recited in amended independent claim 39.

The Whiting-O’Keefe reference also does not teach or suggest “storing the first instance of a work score; obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system; determining a type of patient population that the patient is a member of; accessing work factors for the type of patient population; comparing the patient data for the particular patient to work factors to determine which work factors are satisfied; accessing weighted values for each satisfied work factor; assigning each satisfied work factor with a weighted score; utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time; storing the second instance of a work score; and trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system,” as recited in amended independent claim 39. Instead of utilizing satisfied work factors for a particular patient, the Whiting-O’Keefe reference evaluates the charges to treat a specific patient or group of patients “who will usually *not* be included in the population from which the encounter records are taken.” *See Whiting-O’Keefe reference* at Col. 8, lines 21-24 (emphasis added).

Additionally, the Whiting-O'Keefe reference does not disclose calculating a first and second instance of a work score, as it does not teach or suggest "utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors" or "utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors," as recited in amended independent claim 39.

As acknowledged in the outstanding Office Action, the Whiting-O'Keefe reference fails to disclose "obtaining data for one or more patients directly from a primary clinical information system." For this, the Pollack reference is relied on by the Office. As previously discussed, the Pollack reference is generally directed to quantifying the severity of a patient's condition, and expected length of stay, through retrieval of automated patient information. *See Pollack reference* Col. 4 lines 44-46, Col. 11, Lines 29-31, Col. 17, Lines 66-67. It is respectfully submitted that the Pollack reference does not teach or suggest "obtaining patient data for a particular patient at a first point in time directly from a primary clinical information system," as recited in amended independent claim 39. The Pollack reference also does not teach or suggest collecting data for a second point in time, as it does not disclose "obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system," as recited in amended independent claim 39. Instead, the Pollack reference accesses patient information from an "automated information system" in order to determine the expected length of stay for a particular patient, rather than the actual "clinical" data required by independent claim 39 in generating a work score for a patient. *See Pollack reference* Column 11, lines 26-32. It is respectfully submitted that determining the expected duration of hospital stay is distinct from retrieval of clinical information regarding a particular patient.

The Andre reference is cited in the outstanding Office Action as disclosing “wherein work includes a measure of personnel hours anticipated for the one or more patients.” The Andre reference does not cure the deficiencies of the Whiting-O’Keefe or Pollack references. As previously discussed, the Andre reference is directed to a work score assigned by a schedule evaluator based on employee schedule changes. See *Andre reference* Col. 5, Lines 35-39. The schedule generated by addition or removal of a patient depends on the work performed by the changed employee. See *Andre reference* Col. 5, Lines 49-58. It is respectfully submitted that the amount of work performed by the employee added or removed from a schedule in the Andre reference is distinct from the work score, “wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time,” as recited in amended independent claim 39. The Andre reference also does not disclose, “wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time,” as recited in amended independent claim 39. While the Andre reference adjusts assigned “work” based on employee schedule changes, the Andre reference does not evaluate a first or second instance of work scores which measure “personnel hours anticipated for [a] particular patient.”

Thus, Applicants respectfully submit that the Whiting-O’Keefe, Pollack, and Andre references, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 39. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 39 under 35 U.S.C. § 103(a). Claim 39 is believed to be in condition for allowance and such favorable action is respectfully requested.

Independent claim 40 recites a computer-implemented method for determining the amount of healthcare provider work for a population of patients. The method comprises:



calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system, wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider; storing the work score for each patient; and calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population.

The Whiting-O'Keefe reference is cited in the outstanding Office Action as disclosing "calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system." *See Office Action* p. 14. As previously discussed, the Whiting-O'Keefe reference is generally directed to estimating "charges" for "episodes of care for identified primary and collateral illnesses" that depend on a table of regression coefficients calculated from healthcare encounter records. *See Whiting-O'Keefe reference* at Col. 7, lines 53-54, Col. 8, lines 1-7. It is respectfully submitted that estimating "charges" for patient care based on a table of regression coefficients is distinct from calculating a "work score" for a particular patient based on information obtained from a primary clinical information system.

As acknowledged in the outstanding Office Action, the Whiting-O'Keefe reference fails to disclose "calculating staffing needs for the patient population based on the work scores obtained for the each patient in the population." *See Office Action* p. 14. For this, the Pollack reference is relied on. As previously discussed, the Pollack reference is generally directed to quantifying the severity of a patient's condition, and expected length of stay, through retrieval of automated patient information. *See Pollack reference* Col. 4 lines 44-46, Col. 11, Lines 29-31, Col. 17, Lines 66-67. The Pollack reference utilizes this information to allocate available beds to incoming patients based on the severity of the illness. *See Pollack reference*

Col. 3, lines 28-30. It is respectfully submitted that the Pollack reference does not disclose “calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population,” as recited in amended independent claim 40. While the Pollack reference discloses the coordination of available beds for patients, it does not teach or suggest calculating “staffing needs” for a patient population based on the individual “work scores” obtained for each patient in the patient population.

As acknowledged in the outstanding Office Action, the Whiting-O’Keefe and Pollack references fail to disclose “wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider.” *See Office Action* p. 14. For this, the Andre reference is relied on. The Andre reference does not cure the deficiencies of the Whiting-O’Keefe or Pollack references. As previously discussed, the Andre reference is directed to a work score assigned by a schedule evaluator based on employee schedule changes. *See Andre reference* Col. 5, Lines 35-39. The schedule generated by addition or removal of a patient depends on the work performed by the changed employee. *See Andre reference* Col. 5, Lines 49-58. It is respectfully submitted that a work score generated based on an employee’s schedule is distinct from a work score that “is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider,” as recited in amended independent claim 40.

Thus, Applicants respectfully submit that the Whiting-O’Keefe, Pollack, and Andre references, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 40. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 40 under 35 U.S.C. § 103(a). Claim 40 is believed to be in condition for allowance and such favorable action is respectfully requested.

**C.) Rejection Based on Whiting-O'Keefe in View of Pollack in View of Andre in Further View of Richardson**

Claims 6 and 18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Whiting-O'Keefe reference, in view of the Pollack and Andre references, and further in view of U.S. Patent No. 6,193,654 to Richardson (hereinafter "Richardson reference"). Claims 6 and 18 depend from independent claims 1 and 12. Claim 6 is directed to the method of claim 1, further comprising adjusting the weighted value of one or more work factors triggered by the patient data based on rules. Claim 18 is directed to the media of claim 17, wherein the method further comprises adjusting the value of one or more factors triggered by the data.

As discussed above, the Whiting-O'Keefe, Pollack, and Andre references do not teach or suggest all of the limitations of claims 6 and 18, based at least in part on their dependency from independent claims 1 and 12. It is respectfully submitted that the Richardson reference does not cure the deficiencies of the Whiting-O'Keefe, Pollack and Andre references. The Richardson reference is generally directed to determining the severity of patient illnesses based on monitored predetermined parameters. *See Richardson reference* Col. 6, lines 47-49.

Applicants respectfully submit that the Whiting-O'Keefe, Pollack, Andre and Richardson references, either alone or in combination, fail to teach or suggest all of the limitations of dependent claim 6 and 18. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 6 and 18 under 35 U.S.C. § 103(a). Claims 6 and 18 are believed to be in condition for allowance and such favorable action is respectfully requested.

**D.) Rejection Based on Whiting-O'Keefe in view of Zaleski**

Independent claim 41 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Whiting-O'Keefe in view of U.S. Publication No. 2003/0101076 to Zaleski (hereinafter "Zaleski reference"). Applicants respectfully traverse the 35 U.S.C. § 103(a) rejection of independent claim 41 as hereinafter set forth.

Amended independent claim 41 is directed to a computerized system for optimizing personnel planning in a healthcare organization. The system comprises a work calculation module for calculating a work score for one or more patients; a staff scheduling and staffing module for receiving input from the work calculation module about prospective workload and identifying healthcare personnel positions to be filled; a role management module for managing the roles and information regarding personnel; a workforce outcomes module for determining how effectively healthcare personnel have been used; a demand forecast module for forecasting the volume and type of patients who will present, communicating information regarding a forecasted demand generated by the demand forecast module to the work calculation module, and communicating information to the staff scheduling and staffing module to help determine anticipated clinical demand; and a resource dashboard module for receiving information regarding staff scheduling from the staff scheduling and staffing module, receiving work calculations for the patient population from the work calculation module, and displaying information regarding personnel and patients.

The Whiting-O'Keefe reference is cited in the outstanding office action as disclosing "a work calculation module for calculating a work score for one or more patients," "a demand forecast module for forecasting the volume and type of patients who will present," and "a resource dashboard module for displaying information regarding personnel and patients." *See*

*Office Action* p. 17. The outstanding Office Action also states that the “[s]ystem claim 41 repeats the subject matter of method claim 1 respectively, as a system rather than a series of steps. As the underlying process of claim 1 has been shown to be fully disclosed by the teachings of Whiting-O’Keefe in the above rejection of claim 1, it is readily apparent that the limitations disclosed by Whiting-O’Keefe include the apparatus to perform these functions. As such, these limitations are rejected for the same reasons given above for method claim 1 and incorporated herein.”

As previously discussed, applicants respectfully submit that the Whiting-O’Keefe reference does not teach or suggest “calculating, with a computer processor, a work score for the particular patient using the satisfied factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient,” as recited in amended independent claim 1. To the contrary, the Whiting-O’Keefe reference discloses estimating “charges” for “episodes of care for identified primary and collateral illnesses.” See *Whiting-O’Keefe reference* at Col. 7, lines 53-54. These charge estimates depend on a table of regression coefficients calculated from healthcare encounter records. *Id.* at Col. 8, lines 1-7. It is respectfully submitted that the Whiting-O’Keefe reference not teach or suggest “calculating ... a work score for the particular patient using the satisfied factors,” as in independent claim 1. In fact, the Whiting-O’Keefe reference teaches away from such a calculation using actual patient data. Further, the Whiting-O’Keefe reference admits that its system does not consider the data of the patient in question because it evaluates the charges to treat a specific patient or group of patients “who will usually *not* be included in the population from which the encounter records are taken.” See *Whiting-O’Keefe reference* at Col. 8, lines 21-24 (emphasis added). Additionally, the Whiting-O’Keefe reference does not disclose calculating a work score by “determining a type of patient

population that the patient is a member of; accessing work factors for the type of patient population; comparing the patient data to the work factors to determine which factors are satisfied; accessing a weighted value for each satisfied work factor; assigning each satisfied work factor with a weighted score,” as recited in amended independent claim 1. As such, it is respectfully submitted that the Whiting-O’Keefe reference does not implicitly disclose some or all of the system steps of amended independent claim 41 by virtue of its relation to the method steps of amended independent claim 1.

As acknowledged in the outstanding Office Action, the Whiting-O’Keefe reference fails to disclose “a staff scheduling and staffing module for identifying healthcare personnel positions to be filled,” “role management module for managing the roles and information regarding personnel,” and “a workforce outcomes module for determining how effectively healthcare personnel have been used.” *See Office Action* pp. 17-18. For this, the Zaleski reference is relied on. The Zaleski reference is generally directed to scheduling and allocating healthcare staff to where they are most needed. *See Zaleski reference* ¶ [00007]. It is respectfully submitted that the Zaleski reference does not cure the deficiencies of the Whiting-O’Keefe reference as it also does not disclose “a work calculation module for calculating a work score for one or more patients.”

Applicants respectfully submit that the Whiting-O’Keefe and Zaleski references, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 41. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 41 under 35 U.S.C. § 103(a). Claim 41 is believed to be in condition for allowance and such favorable action is respectfully requested.

**E.) Rejection Based on Whiting-O'Keefe in View of Zaleski in Further View of Ross**

Claims 42 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Whiting-O'Keefe reference, in view of the Zaleski reference, in further view of U.S. Patent No. 7,076,436 to Ross, Jr. et al. (hereinafter "Ross reference"). As the asserted combination of references fails to teach or suggest all of the limitations set forth in the rejected claims, Applicants respectfully traverse the rejection, as hereinafter set forth.

Claim 42 is directed to the system of claim 41, further comprising an enterprise scheduling module for identifying information regarding appointments for outpatient procedures. Claim 43 is directed to the system of claim 42, further comprising a shift assignment module for displaying one of the capacity, availability and combinations thereof of personnel currently working.

It is respectfully submitted that claims 42 and 43 are patentable, based at least on their dependency from independent claim 41. As previously discussed, the Whiting-O'Keefe and Zaleski references do not disclose all of the elements of claim 41. It is respectfully submitted that the Ross reference does not cure the deficiencies of the Whiting-O'Keefe or Zaleski references. The Ross reference is cited in the outstanding office action as disclosing "an enterprise scheduling module for identifying information regarding appointments for outpatient procedures," and "an enterprise scheduling module for identifying information regarding appointments for outpatient procedures." See *Office Action* pp. 18-19. The Ross reference is generally directed to a tracking module with which medical staff can view the status of patients and departments. See *Ross Reference* Col. 6, ¶ 102. It is respectfully submitted that the Whiting-O'Keefe, Zaleski, and Ross references do not teach "a work calculation module for

calculating a work score for one or more patients,” as incorporated into claims 42 and 43 from claim 41, and described in the previously presented specification.

Applicants respectfully submit that the Whiting-O’Keefe, Zaleski, and Ross references, either alone or in combination, fail to teach or suggest all of the limitations of dependent claims 42 and 43. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 42 and 43 under 35 U.S.C. § 103(a). Claims 42 and 43 are believed to be in condition for allowance and such favorable action is respectfully requested.

**F.) Rejection Based on Whiting-O’Keefe in View of Zaleski in View of Ross, in Further View of Richardson**

Claims 44 and 45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Whiting-O’Keefe reference, in view of the Zaleski reference, in view of the Ross reference, and in further view of the Richardson reference. As the asserted combination of references fails to teach or suggest all of the limitations set forth in the rejected claims, Applicants respectfully traverse the rejection, as hereinafter set forth.

Claims 44 and 45 depend from independent claim 41. As discussed above, the Whiting-O’Keefe, Zaleski, and Ross references do not teach or suggest all of the limitations of independent claim 41. It is respectfully submitted that the Richardson reference does not cure the deficiencies of the Whiting-O’Keefe, Zaleski, and Ross references. The Richardson reference is generally directed to determining the severity of patient illnesses based on monitored predetermined parameters. *See Richardson reference* Col. 6, lines 47-49. Applicants respectfully submit that the Whiting-O’Keefe, Zaleski, Ross, and Richardson references, either alone or in combination, fail to teach or suggest all of the limitations of dependent claims 44 and 45. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 44 and 45



under 35 U.S.C. § 103(a). Claims 44 and 45 are believed to be in condition for allowance and such favorable action is respectfully requested.

**G.) Rejection Based on Whiting-O'Keefe in View of Zaleski in View of Ross in View of Richardson in Further View of Pollack**

Claims 46 and 47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Whiting-O'Keefe reference, in view of the Zaleski reference, in view of the Ross reference, in view of the Richardson reference, and in further view of the Pollack reference. As the asserted combination of references fails to teach or suggest all of the limitations set forth in the rejected claims, Applicants respectfully traverse the rejection, as hereinafter set forth.

Dependent claim 46 is directed to the system of claim 45, further comprising a patient severity module for providing information regarding the status and conditions of patients. Dependent claim 47 is directed to the system of claim 46, further comprising a departmental tracking module for tracking patients through different departments.

As previously discussed, the Whiting-O'Keefe, Zaleski, Ross, and Richardson references fail to teach or suggest all of the limitations of claim 45, from which claims 46 and 47 depend. Additionally, claims 46 and 47 depend from independent claim 41, which, as previously discussed, is not disclosed by the Whiting-O'Keefe or Zaleski references. It is respectfully submitted that the Pollack reference fails to cure the deficiencies in the Whiting-O'Keefe, Zaleski, Ross and Richardson references. Applicants respectfully submit that the Whiting-O'Keefe, Zaleski, Ross, Richardson, and Pollack references, either alone or in combination, fail to teach or suggest all of the limitations of dependent claims 46 and 47. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 46 and 47 under 35 U.S.C. § 103(a).

Claims 46 and 47 are believed to be in condition for allowance and such favorable action is respectfully requested.

**H.) Rejection Based on Whiting-O'Keefe in View of Zaleksi in View of Ross in View of Richardson in View of Pollack in Further View Brandt**

Claim 48 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the Whiting-O'Keefe reference, in view of the Zaleski reference, in view of the Ross reference, in view of the Richardson reference, in view of the Pollack reference, in further view of U.S. Publication No. 2003/0050797 to Brandt et al. (hereinafter "Brandt reference").

Claim 48 is directed to the system of claim 47, further comprising a personal work queue module for tracking and displaying work to be performed by individual personnel. As previously discussed, the Whiting-O'Keefe, Zaleski, Ross, Richardson, and Pollack references fail to teach or suggest all of the limitations of claim 47. As the Brandt reference fails to cure the deficiencies of these references, Applicants respectfully request withdrawal of the rejection of claim 48 under 35 U.S.C. § 103(a). Claim 48 is believed to be in condition for allowance and such favorable action is respectfully requested.

**NEW CLAIMS**

Claim 49 has been added by way of the present communication. It is respectfully submitted that claim 49 is supported by the as-filed specification and that no new matter has been added by way of this claim addition. Claim 49 is believed to be in condition for allowance, and such favorable action is respectfully requested.

### **CONCLUSION**

For at least the reasons stated above, each of claims 1–2, 5–7, 9–24, and 39–49 are believed to be in condition for allowance. Applicants respectfully request withdrawal of the pending rejections and allowance of the claims. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned—by telephone at 816-474-6550 or via email at [aerickson@shb.com](mailto:aerickson@shb.com) (such communication via email is herein expressly granted)—to resolve the same.

The fee for a three-month extension is submitted herewith by way of electronic payment. It is believed that no additional fee is due. However, if this belief is in error, the Commissioner is hereby authorized to charge any amount required, or credit any overpayment, to Deposit Account No. 19-2112, referencing attorney docket number CRNI.108473.

Respectfully submitted,

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